

CSC 174 Spring 2023
Assignment 5 Part1
Total points: 40

I do NOT debug for students. Solving assignment problems independently is one assessment criteria of all assignments.

Section 1

Use the tables you created in your Assignment 3 (or Assignment 4).

Section 2

Populate the database. See Section 3 for more details.

Section 3

Create triggers to maintain the consistency of the derived attribute NoOfStudents in the course table.

- 1) When add a new record in the enrollment table, update the corresponding value of NoOfStudents enrolled in the course.
Trigger Name: Inc_enrollment_number
- 2) When delete a record in the enrollment table, update the corresponding value of NoOfStudents enrolled in the course.
Trigger Name: Del_enrollment_number

Submission

Submit the following files to Canvas. Do NOT zip your files. **Zip your files will get a Zero.** Please check the syllabus to see what you need to pay attention to when submitting an assignment.

You must execute each statement before submission. 0 point will be given to each non-executable.

1. Create table statements (file name must be: 1_create_table.txt)
2. Insert statements to populate database (file name must be: 2_populate_db.txt)
3. Definition of the triggers, i.e. create trigger statements (file name must be: 3_trigger.txt)

4. For each trigger, show a scenario that the trigger can be triggered and the changes of the “NoOfStudents” value because of the trigger, please include short description (e.g. the database value of “NoOfStudents” before trigger’s execution and after trigger’s execution) and screenshots (file name must be: 4_result.pdf)

Assignment 5 Part 2
Total points: 30

Please submit **ONE** PDF file to Canvas. Submission must be typed. Handwritten submission will get a 0. **File name: Assn5_part2.pdf**

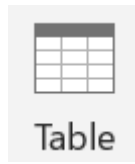
1. Given $R(C, D, E, F, W)$, and the following functional dependencies:

$F \rightarrow E$

$F \rightarrow W$

$C \rightarrow D$

We decompose R into two relations $R_1(C, D)$ and $R_2(E, F, W, C)$. Does this decomposition have the lossless join property? Show your steps to achieve the answer.



You can use a table

to present the matrices and use



to show “cross out”.

2. Given $R(a,b,c,d,e,f,w)$ and the following functional dependencies:

Fd1: $a \rightarrow \{b,c\}$

Fd2: $d \rightarrow \{e,f\}$

Decompose R into 3rd normal form with both dependency preservation property and loss-less join property.

3. Given $R(x,y, c,z,e,f,w)$. There are two keys: (x,y) and z . Given the following functional dependency: $F = \{ \{x,y\} \rightarrow \{c,z,e,f,w\}, z \rightarrow \{x,y, c, e,f,w\}, f \rightarrow x \}$. Decompose R into BCNF.

Grading:

Each question is 10 points.

For each question, the points break down are:

C1	Show steps (5 points)	No steps (0 point)
C2	Answer is correct (5 points)	*Answer is wrong or partially correct (0 point)

*For partially correct answer, “partial credit” of this assignment is awarded by C1.

You must submit all files, including the files of Part1 and Part2, together. Do NOT zip them.